

Chapter 1

A problem: A situation that requires a solution **or** an objective you want to achieve through following consecutive steps sequentially.

Problem solving: Problem Solving is the steps, activities, and processes to be done to reach an output or objective.

Problem solving stages:

First: Problem Definition: Implies the identification of required outputs, available inputs and, arithmetic and logical operations to be executed.

Second: Algorithm Preparation: **Algorithm** is one of the methods used to solve a problem through logically arranged procedures (series of successive steps)

Flowcharts: It is a diagram that uses standard graphical symbols to illustrate the sequence of steps required for solving a problem or specific question.

Some advantages of flowcharts:

- Facilitating the reading and understanding of the problem.
- Useful to explain the program to others.
- helping in documenting the program in better manner.

Third: Program design (into one of the programming languages)

Fourth: Program Testing

Fifth: Program Documentation: writing all steps(given Input, output, plan for solving the problem, drawn flowchart, programming language used for coding , instructions, date of last modification of the program).

Documentation is beneficial when

- 1- More than one person participate in writing the program.
- 2- Modifying the program.

The most commonly used symbols

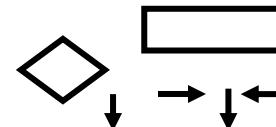
Terminal (Start / End) 

Input, Read, Get, Enter / Output, Print 

Process

Decision

Flow lines



The variable refers to a memory storage that holds a value

The equation: $C = A + B$, indicates the sum of the value of A, to the value of B, and stores the result in C.

The left hand side (LHS) of any equation should contain only one variable (output) or the solution of the equation.

The right hand side (RHS) of the equation may contain abstracted values or arithmetic expressions.

Chapter 2

Visual Basic.net language: one of the high level programming languages easy to learn as its commands uses English language. used in many applications (Windows applications or Web applications)

Programing and computer memory: objects are created in computer memory and every object has:

- 1- **Properties:** such as (size-colour- font) of the text.
- 2- **Events:** such as click on a command button.
- 3- **Procedures:** each one contains commands and instructions which are carried out when calling this procedure.

Visual Basic.net is considered:

Object oriented: programmes work through objects in computer Memory.

Event Driven: commands and instructions are carried when certain event occurs.

The Framework.Net provides:

- 1- **Libraries** through which we create the objects,
- 2- **Runtime environment** (called **Runtime**) in computer memory where Applications work in.
- 3- **Compilers** which compile commands and instructions written in Programming language into machine code which the Computer deals with.

IDE refers to Integrated Development Environment

That help programmer to create applications (windows – mobile – web.....). Visual Studio represents IDE

The form: is the interface which the user deals with through different controls such as Button, Textbox, label.....etc.

Toolbox: It contains tools of controls which can be put on the Form and can be shown in categories

Properties window: has a group of properties which can be adjusted through "Properties Window"

The shown Properties in Properties Window are different according to the active part on the IDE screen.

Solution Explorer: There is a list of folders and files of the projects in this part.

Chapter 3

Common properties among different Controls such as (Name-Text – Forecolor – Backcolor - Right To Left.....etc.)

Properties which their effect doesn't appear on Controls until you set some other properties (Right to Left Layout property doesn't work unless the value Right to Left equals Yes)

properties of the form, if they are set, they are applied to Controls which are placed on this Form such as (**Font** and **ForeColor** properties).

The **default value** of the property (Text) and the property (Name) is the same and it is (Form1)

some properties which their effect doesn't appear on the Form or Controls until you **run** the programme like (**WindowState**).

By double clicking on the on Toolbox, the control appears on the Form in **Design mode**.

Control name	Property name	Function	Default Value
Form: is the interface which the user deals with through different controls	Name	Name of Form used in Code Window.	Form1
	Text	The appeared Text on the title bar of the Window.	Form1
	BackColor	The background color of the Form.	
	RightToLeft	The direction of Controls on the form Window From Right to Left.	No
	RightToLeftLayout	The layout of Controls on the Form from right to left.	False
	MinimizeBox	It controls the appearance or disappearance of MinimizeBox of Form Window.	True
	MaximizeBox	It controls the appearance or disappearance of MaximizeBox of Form Window.	True
	ControlBox	It controls the appearance or disappearance of ControlBox of Form Window.	True
	FormBorderStyle	The Border style of Form Window.	
	WindowState	It defines the Window State of the Form (Maximizing, Minimizing or normal).	

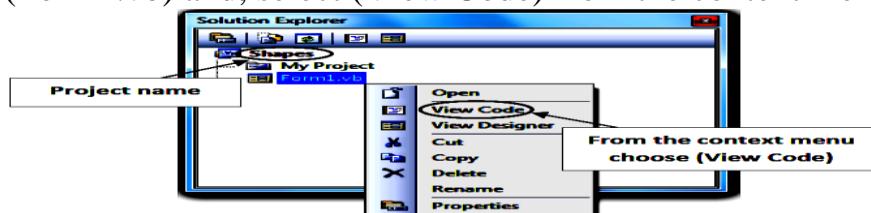
Button: When you click it, it does a certain task.	ForeColor	Choosing the ForeColor to the appeared Text on the Button	
	Font	Defining (shape, size and style) of the Text font appeared on the Button.	
	Location	The location of placing Button on the Form.	0,0
	Size	Defining the height and width of Button on the Form.	75,23
Label: used in showing a Text on the Form Window which can't be changed during programme Runtime.	AutoSize	The Size of the Label is defined automatically according to the written Text if the Value of property equals true.	True
	BorderStyle	Choosing the Border Style of the Label	
Textbox: used to insert (input) data from the user during programme run time.	MaxLength	It defines the maximum number of letters which can be inserted in the TextBox	
	PasswordChar	It defines a symbol used instead of written text in case we have a password.	
	Multiline	allows multiple lines within the text box control tool.	False
ListBox: Shows a list of items	Items	A group of items shown in the ListBox	
	Sorted	It defines whether the elements in the list are sorted or not.	False
	SelectionMode	It defines whether it is possible to choose one item or more shown in the ListBox.	
ComboBox: displays a drop-down list from which one item can be selected	Items	A group of items shown in the ComboBox	
	AutoCompleteSource	It is a source of suggested items to select from.	
	AutoCompleteMode	It defines the method of list completing process.	
GroupBox: Is used to group other controls of same function together on the Form window			
RadioButton: The programme user selects one alternative only.	Checked	It shows whether RadioButton has been chosen or not.	False
CheckBox: used for placing some alternatives to enable the user to select One CheckBox or more	Checked	It shows whether CheckBox has been chosen or not.	False

Chapter4

Code Window: window through which we can write instructions and codes of the program.

To open the (Code Window) of (Form1):

1. Make sure that the window Form is active **then** From the keyboard press (F7)
2. In the (Solution Explorer) window, right click the file (Form1.vb) and, select (View Code) from the context menu.



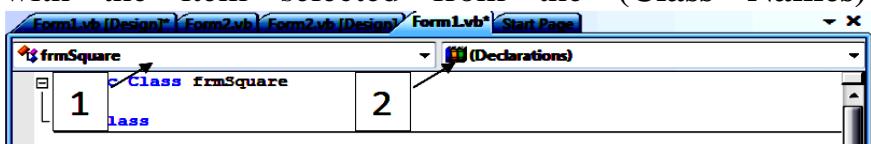
Code window is displayed as shown



- (1) Name of the file where codes are saved.
- (2) Name of the file where the Form window interface is saved.
- (3) The declaration of Class; its name is (Form1).
- (4) Space between two lines; to type codes for the Class (Form1).
- (5) The end of the class (form 1).

the Code Window

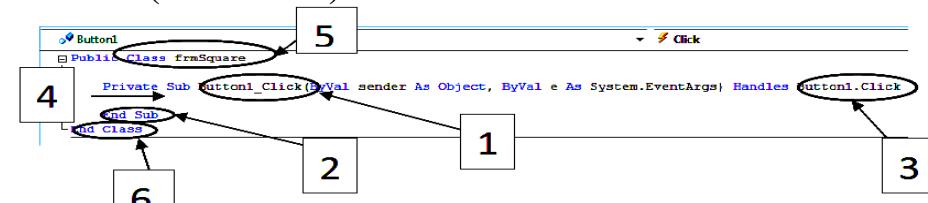
- (1) A drop-down menu of (**Class Names**) that displays the names of controls on the form.
- (2) A drop-down menu of (**Method Names**) or events; associated with the item selected from the (**Class Names**) menu.



Event Handler: procedure which contains a code that is carried out when a corresponding event occurs

To create event handler for a button:

1. After opening code window
2. select (Button1) from the **Class menu drop down list**, open (Method name) menu it displays the events associated with Button1 (**click event**)



- (1) The procedure name composed of (object name, event name).
- (2) End of procedure line.
- (3) What causes the call of the procedure (event occurrence) .
- (4) Between the two lines shown; the code that will be executed on calling the procedure is written after the occurrence of the Event
- (5) The declaration of the class line (frmSquare)
- (6) The end of (class) line.

Setting the (Properties) programmatically

You can adjust the properties using the following syntax:



Example:

Write the following code in the appropriate event handler (Button1_Click) for button1

```
Private Sub Button1_Click(sender As Object, e As EventArgs) Handles Button1.Click
    Label1.Text = "جمهورية مصر العربية"
    End Sub
```